Sertifikaat

REPUBLIEK VAN SUID-AFRIKA

Certificate

PATENTKANTOOR

PATENT OFFICE

DEPARTEMENT VAN HANDEL EN NYWERHEID

REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF TRADE AND INDUSTRY

Hiermee word gesertifiseer dat
This is to certify that

CERTIFIED COPY OF PRIORITY DOCUMENT

the annexed documents are a true copy of the provisional specification and drawings of South African Patent Application No 96/6410 filed on the 29th July, 1996.

in die Republiek van Suid-Afrika, hierdie 24th dag van June 1998
in the Republic of South Africa, this day of

Registrateur van Patente
Registrar of Patents

P.O. 019-0196

REPUBLIC OF SOUTH AFRICA

H 563E

PATENTS ACT, 1978

Form P 1

APPLICATION FOR A PATENT AND ACKNOWLEDGEMENT

[Section 30 (1)—Regulation 22]
(See notes overleaf)

The grant of a patent is hereby requested by the undermentioned applicant on the basis of the present application in duplicate.

(i)

Official application No.			Applicant's or agent's reference
21	01	96410	

(ii)

71	Full name(s) of applicant(s).....	KEVIN PATRICK AUSTIN PEARMAN

(iii)

	Address(es) of applicant(s).....	P.O. BOX 79253 SENDERWOOD 2145

(iv)

54	Title of invention	TYRE MANAGEMENT SYSTEM (TMS)

(v)

	The applicant claims priority as set out on the accompanying form P 2

(vi)

		This application is for a patent of addition to Patent Application No.	
21	01		

(vii)

		This application is a fresh application in terms of section 37 and based on Application No.	
21	01		

(viii)

		This application is accompanied by:
	1.	A single copy of a provisional or two copies of a complete specification of.....3.....pages.
	2.	Drawings of.....5.....sheets.
	3.	Publication particulars and abstract (form P 8 in duplicate).
	4.	A copy of Figure.....of the drawings (if any) for the abstract.
	5.	An assignment of invention.
	6.	Certified priority document(s) (state number).
	7.	Translation of the priority document(s).
	8.	An assignment of priority rights.
	9.	A copy of the form P 2 and the specification of S.A. Patent Application No. 21 01
	10.	A declaration and power of attorney on form P 3.
	11.	Request for ante-dating on form P 4.
	12.	Request for classification on form P 9.
	13.	

(ix)

74	Address for service: P.O. BOX 79253 SENDERWOOD 2145

Dated this.....26th.....day of.....JULY.....19.96

.....
Signature of applicant(s) or agent

REGISTRAR OF PATENTS, DESIGNS, TRADE MARKS AND COPYRIGHT
1996 -07- 29
Received
REGISTRATEUR VAN PATENTE, MODELLE, HANDELSMERKE EN OUTEURSREG

The duplicate will be returned to the applicant's address for service as proof of lodging but is not valid unless endorsed with official stamp.

.....
Registrar of Patents

Form P 3

REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

DECLARATION AND POWER OF ATTORNEY

(Section 30 – Regulations 8, 22(1) (c) and 33)

Patent/Application		Lodging date	
21	01 966410	22	1996 -07- 29

Full name(s) of applicant(s)

71 KEVIN PATRICK AUSTIN PEARMAN

Full name(s) of inventor(s)

72 KEVIN PATRICK AUSTIN PEARMAN

Priority claimed	Country		Number		Date	
	33		31		32	

Title of invention

54 TYRE MANAGEMENT SYSTEM (TMS)

* I/We, KEVIN PATRICK AUSTIN PEARMAN

.....

hereby declare that –

1. I/We am/are the applicant(s) mentioned above;
2. I/We have been authorised by the applicant(s) to make this declaration and have knowledge of the facts herein ~~stated in the~~ capacity of .....

** ..... of the applicant(s) ;

3. the inventor(s) of the abovementioned invention is/are the person(s) named above; ~~and the applicant(s) has/have acquired the right to apply by virtue of~~ .....

.....

4. to the best of my/our knowledge and belief, if a patent is granted on the application, there will be no lawful ground for the revocation of the patent;

Signed at SENDERWOOD this 26th day of JULY 1996

SIGNATURE

INVENTOR
CAPACITY

* Give full names and capacities of persons signing on behalf of a body corporate or partnership

** Delete if applicant is a natural person

*** Delete second line if applicant is inventor

RP. 40(E)

Form P 6

REPUBLIC OF SOUTH AFRICA

PATENTS ACT, 1978

PROVISIONAL SPECIFICATION

(Section 30(1)-Regulation 27)

Official application No.			Lodging date
21	01	966410	22 1996 -07- 29

Full name(s) of applicant(s)
71 KEVIN PATRICK AUSTIN PEARMAN

Full name(s) of inventor(s)
72 KEVIN PATRICK AUSTIN PEARMAN

Title of invention
54 TYRE MANAGEMENT SYSTEM (TMS)

(RP42E)

TYRE MANAGEMENT SYSTEM (TMS)

BACKGROUND

Riding a loaded truck on under-inflated or flat tyres causes a massive heat build-up and distortion of the profile which destroys a tyre completely not just the tread, but the side-walls and the carcass

When a flat occurs on a side-by-side configuration, the good tyre then bears the load of the two causing excessive wear. If this persists, the two tyres bulge and rub against each other causing a tremendous heat build-up in both and the resultant destruction of both - a costly puncture, not to mention the down time of the vehicle and the very serious problem of a potential accident caused by the large chunks of tyre either flying off the vehicle in the face of on-coming traffic, or simply lying on the road - A bad image for any company.

Large multi-tyre vehicles have a major problem in that the driver does not know if a tyre has developed a leak until it is much too late.

There has always been an urgent need for a reliable device to provide a warning of an under-inflated condition to the driver whilst the vehicle is in motion but the need to prevent under-inflation is reaching an unprecedented high due to the costs of tyres, the costs of down-time and the accident potential.

THE TYRE MANAGEMENT SYSTEM (TMS)

The *TMS* has been developed to meet the specific needs of monitoring tyre pressures and temperatures and warning the driver of a potential problem *before it is too late.* All systems of the *TMS* self-check every 5 minutes to ensure that the system is fully functional.

The system comprises a monitor for the horse and a transmitter for each wheel. The *TMS* constantly monitors each individual tyre and provides six sets of information to the driver and the base station and retains this information for later evaluation by management:-

- **Present Tyre Pressure.**

  Whatever pressure is required for normal operating conditions is set digitally on the main control unit.

- **Pressure Alarm.**

  Any change in inflation either above or below the pre-set value will result in both an audible and visual warning.

- **Present Tyre Temperature.**

- **Temperature Alarm.**

  Any deviation in excess of a pre-set upper limit will activate the alarm.

- **Vibration Alarm.**

- **Serial number of unit.**

  The serial number of the unit is read with a torch reader which also absorbs all the information stored in the main control unit. This information can then be downloaded onto a computer.

METHOD OF OPERATION (Drawings 1,2 and 3)

Each wheel unit operates with its own unique code, thus preventing one trailer affecting another. There is no limitation to the amount of wheels that may be connected to any one unit. Trailers may be interchanged at random and the main control unit automatically senses the change in wheel transmitters and responds to these new units.

In the event of any of the limits falling outside of the "normal", an alarm is sounded in the cab and a visual indication is given of the exact wheel that is causing the specific problem.

The driver may reset the audible warning. The unit also passes back its information to the control room by either cellular or trunked radio thus providing detailed and immediate information to the fleet manager as well as storing its information for downloading onto a computer for accurate evaluation of the drivers performance and a complete tyre management program.

POWER GENERATION Drawings 4 and 5)

Two methods of generating power for the wheel transmitters are included:-

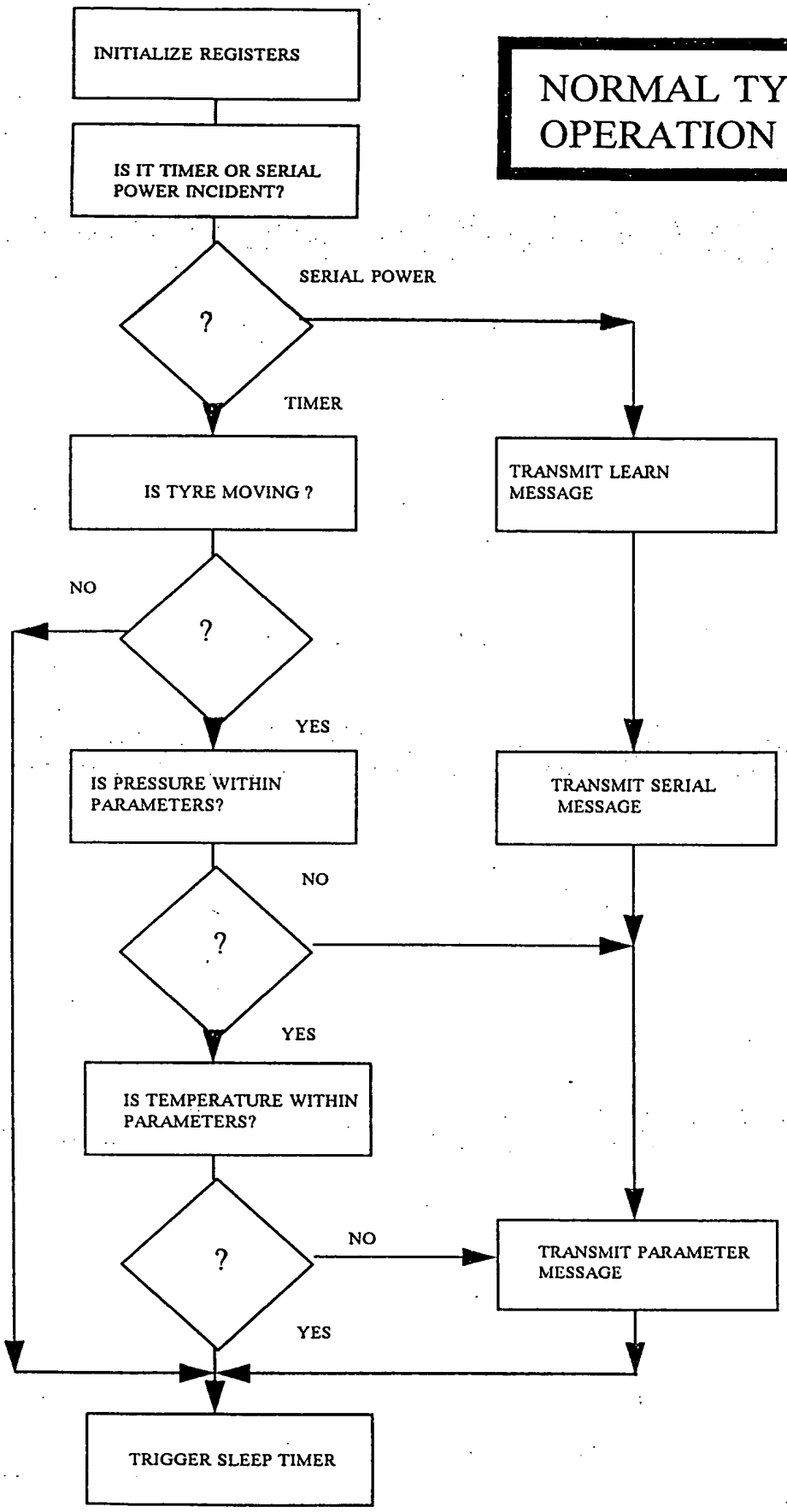
1. GENERATOR (Drawing no. 4)

   A permanent magnet motor or other similar device is mounted in the centre of the wheel on the circuit board. An off-set weight is attached to the shaft of the motor. When the wheel turns, the weight remains stationary with the vertical and the magnet thus turns around the armature thus generating power for the operation of the circuit. The power is stored in a capacitor.

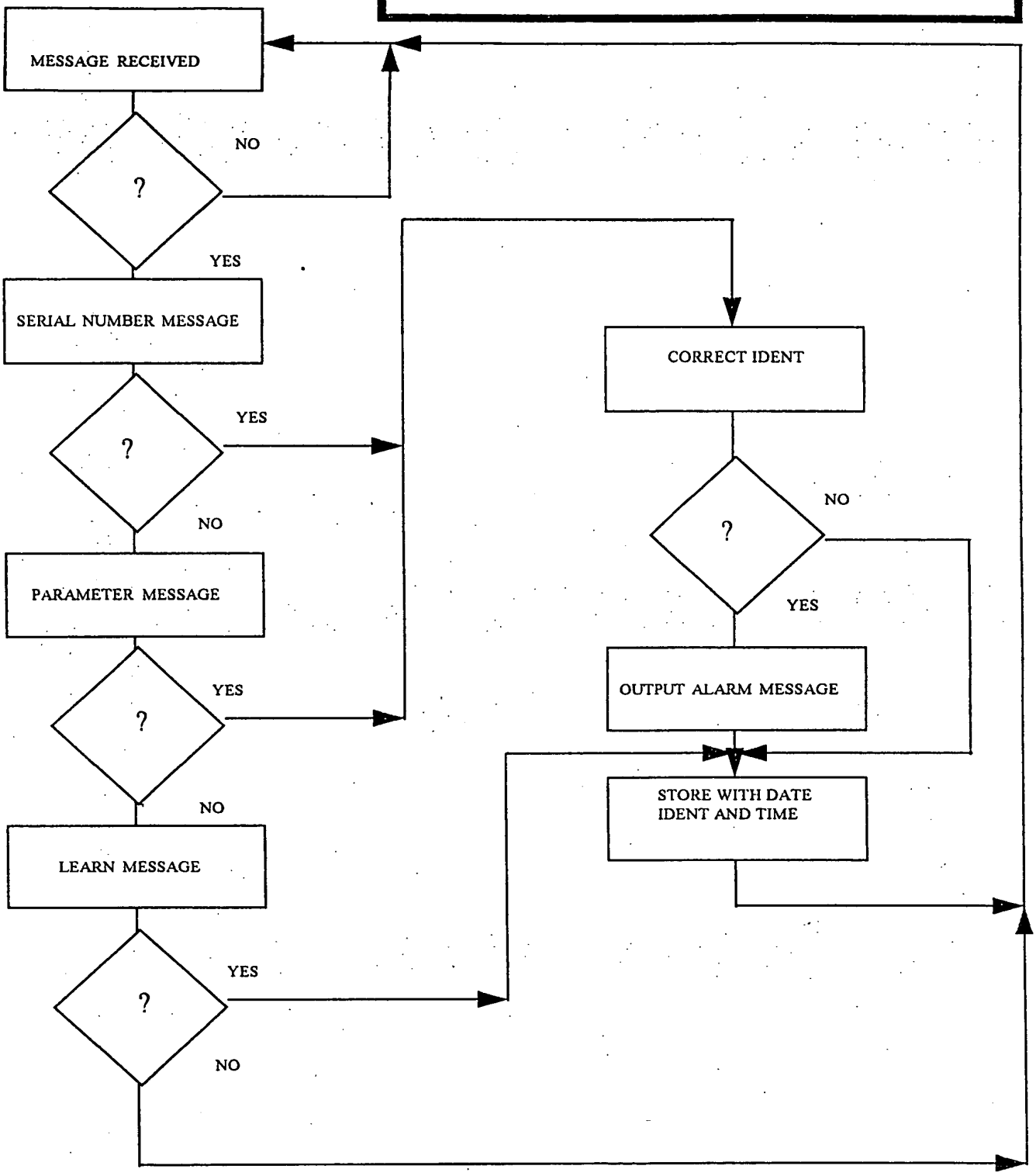
2. PIEZO ELECTRIC ELEMENT (Drawing no. 5)

A piezo electric element is attached at its extremity to the circuit board by solder. A weight is soldered onto the other side which is free to move within certain limitations. As the vehicle moves, a vibration is set up causing the piezo electric element to generate power. This power is then stored in a capacitor for use by the circuit.

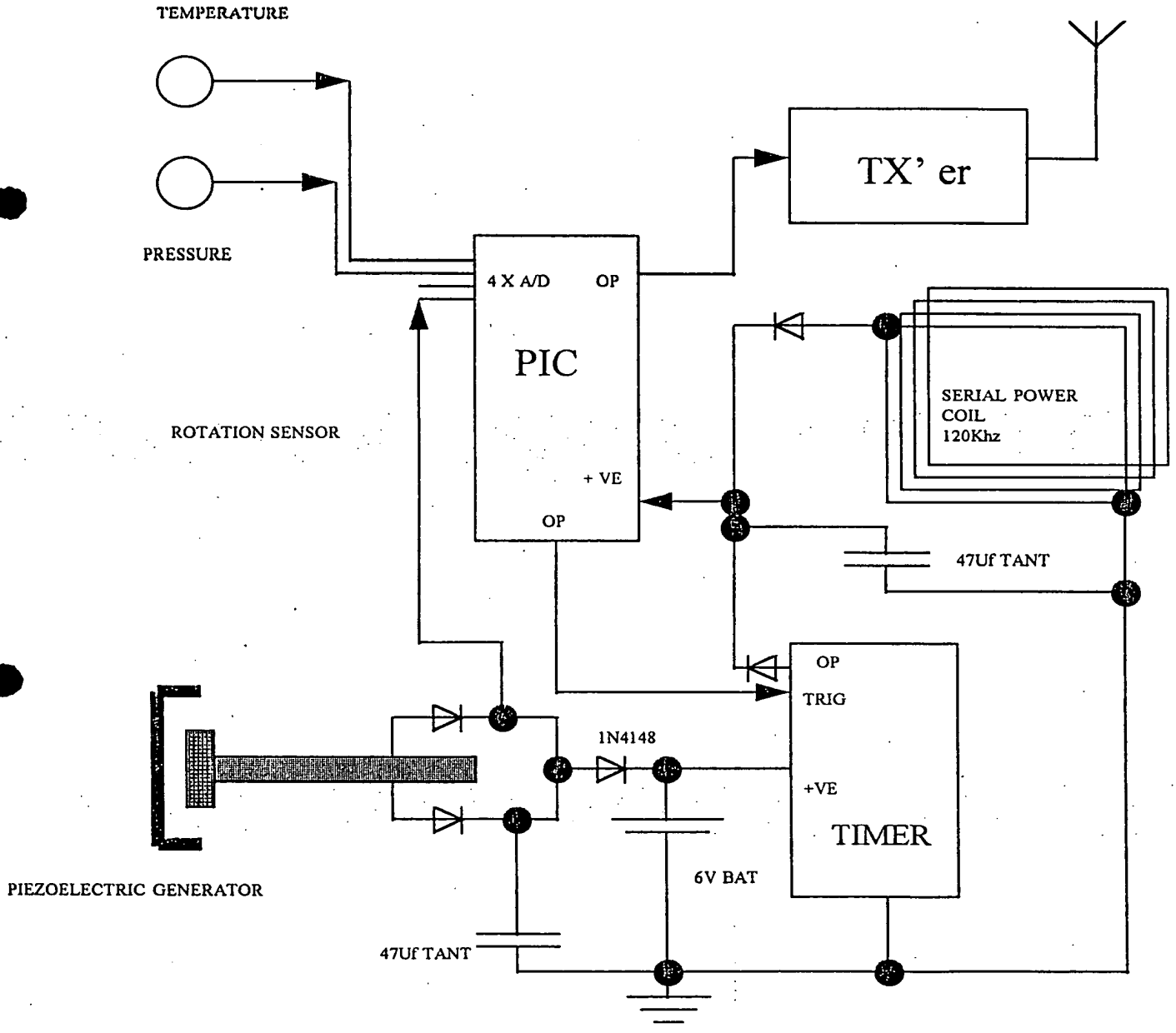
NORMAL TYREMASTER OPERATION FLOWCHART



TYREMASTER CONTROLLER

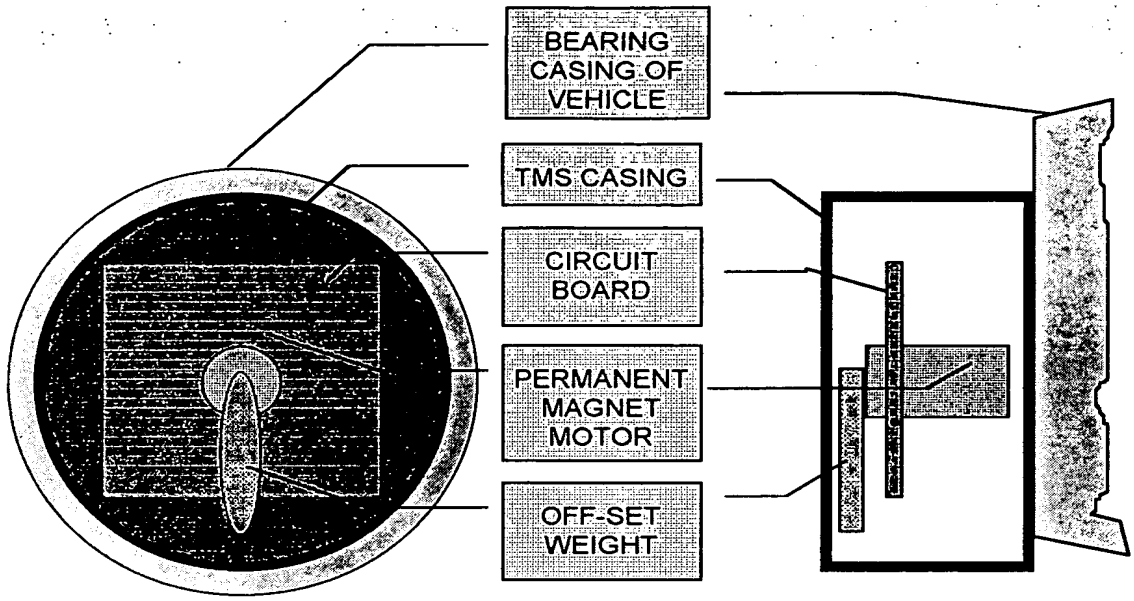


TYREMASTER SCHEMATIC

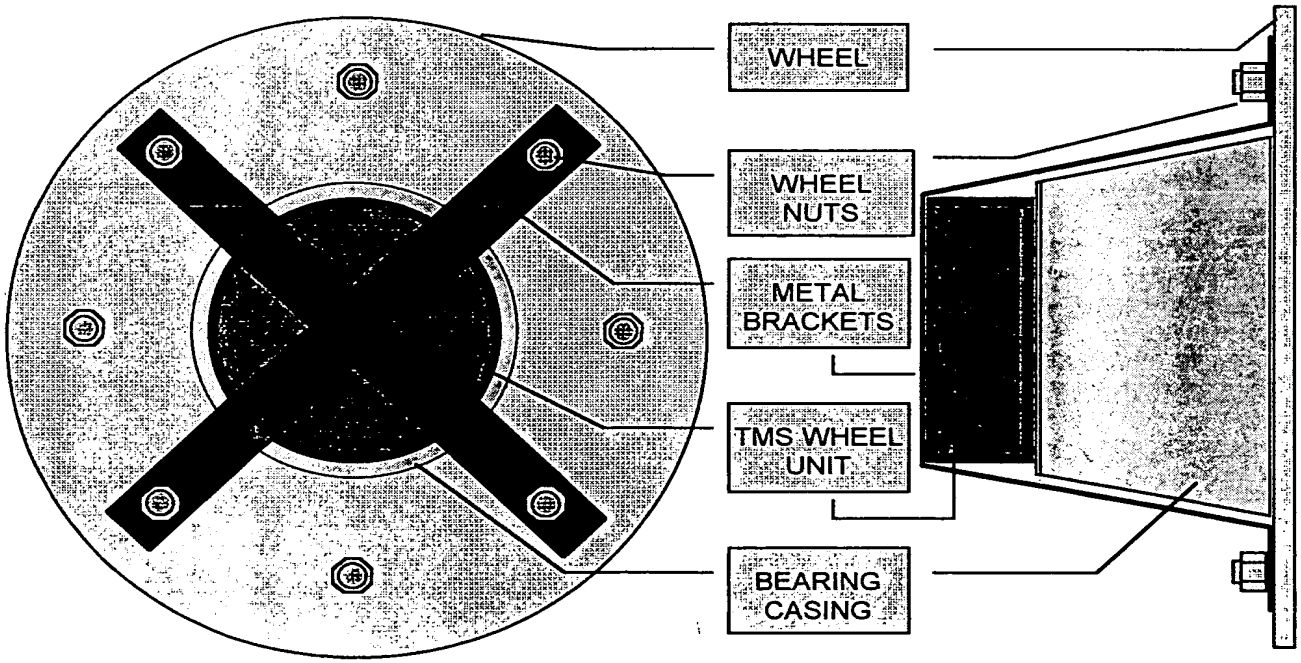


TMS

TYRE MANAGEMENT SYSTEM



METHOD OF ATTACHMENT



TYREMASTER POWER GENERATOR